Chapter 6
Mobile Agent–Based Multimedia Content Discovery

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ABSTRACT

Content discovery is an important aspect in the context of ever-growing internet based information services and management. Especially multimedia content discovery is an essential aspect because it is an effective and efficient way to deliver the concept to the people or making them understands easily. For this multimedia content discovery, a well known search engine Google is using different kind of linking techniques. But the challenge arises, in case the multimedia content location is not available with the link, then it is not able to discover the content location. To overcome the above limitation, we propose this mobile agent based multimedia content discovery model. Here, mobile agent would be send to the location of the server where the content is available and bring it to the real world environment. Also with the advantage of the mobile agent, we can reduce the network traffic and also we can discover all the contents location.

INTRODUCTION

Now days, contents are created and available all over the Internet world. Delivering the contents to everyone from all the locations is a herculean task. Before delivering or bringing the contents, it is necessary to discover the location of the content and what is the content. But discovering the content is major challenging and crucial task because network information resources are dynamic, autonomous, heterogeneous and, distributed in nature. In recent years multimedia contents (audio, video and image) are playing the very important role in the knowledge sharing. Hence, it is must to discover the multimedia content and also discovering this multimedia content location.
is more and more complicated. For this discovery, day to day, search engines are doing the process in an efficient manner. Even though lot of search engines and various techniques are available to discover the content location, some of the contents are always hided in some locations. To bring all the contents to the real time environment, this chapter uses the mobile agent technology, which is having multiple features.

Overview of Mobile Agent

In the growth of the Internet world, many new network related technologies are incorporated to improve the quality of service. In this vision, the message passing systems, Remote Procedure Call (RPC) (Tay and Ananda, 1990) and Distributed Object Systems (Minar, 1998) are developed in the line of distributed computing. In message passing systems, the programs available at two ends can communicate with each other by sending simple messages over the network. In Remote Procedure Call (RPC), a program on the client communicates with other program available on the remote server by calling functions. In Distributed Object Systems, instead of calling a function, the remote machine invokes the objects residing on the server, and therefore is possible to access the properties and methods of objects. However, those functions and objects are pre-defined and lack the flexibility for customization. Mobile agent technology, continued in this line of evolution by introducing client customization and autonomy, improves the smartness of the distributed systems. The study (Sau-Koon Ng, 2000) reveals that the effectiveness of the dynamic code deployment and remote data processing in the mobile agents reduces the network’s total latency time and traffic volume.

Mobile Agent (MA)

The mobile agent (Hohl, 1999) is a software agent acting on behalf of its owner with the extra capabilities of mobility. Mobility refers to the migration of the agent from one node to another node to perform certain computations on behalf of its owner. The platform, from which a mobile agent originates, is called the home platform and the user who creates the mobile agent is referred to as the originator. The mobile agent consists of the state (execution status of the agent), code (computation to be performed) and data. Whenever a mobile agent decides to move from one node to another node, it saves its state and dispatch with the saved state to the next machine and resumes execution from the saved state. In addition to this, the mobile agent has the capability to execute asynchronously and to be fault-tolerant among other ones (Kotzanikolaou et al., 2000). The mobile agent supports both strong and weak mobility. The migration of data and code is the weak mobility, and the migration of data, code and state is the strong mobility.

Mobile Agent Life-Cycle

Figure 1 shows the mobile agent’s life cycle model. In general, a typical mobile agent has

![Figure 1. Life cycle of a mobile agent](image-url)